Remarks

Claims 1-11, 16, 17, 19, 21-32, 34-37, 44-53, 55-76 and 85-88 are pending.

Claims 21-22, 25-27, 29-31, 36 and 51-53 have been withdrawn from consideration.

Rejection of Claims under 35 U.S.C. §§ 102(b)/103(a)

The Examiner rejected Claims 1-2, 9, 16, 28, 37, 24, 34, 60, 35, 44-50, 62-76, 55-58 and 85-88 under Section 102(b) as anticipated by USP 5,650,593 (McMillan), and Claims 3-8 as obvious over McMillan. These rejections are respectfully traversed.

In response to Applicant's Response filed February 7, 2008, the Examiner stated as follows:

> Regarding McMillan, applicants argue McMillan's stiffener **217** is a single continuous casing member. The examiner notes that in **figure 11** of the present invention, the stiffeners are shown in cross-section. **Figure 9** shows a top view of the present invention illustrating a single, continuous casing member **26** as a stiffener or stiffeners with respect to both sides of the substrate. Similarly to the McMillan's stiffener, in a cross-sectional view, the stiffener **217** is shown lying on both sides of the substrate, thereby being the stiffener components of the substrate.

Applicant's **Fig. 11** illustrates a cross-sectional view of lead frame assembly shown in **Figs. 9-10** (and **Fig. 3**) situated within a molding apparatus **4**. In **Figs 3** and **9**, the illustrated embodiment of the molded stiffener **26** is a continuous structure with a cross member **60**. It is pointed out that this depiction is *one embodiment* of an assembly according to the invention, as stated at paragraphs [0037] and [0046] of Applicant's published application US 2003/0155636 (emphasis added):

> [0037] Turning to **FIG. 3**, *an embodiment* of a molded stiffener **26**, according to the invention, associated with lead frame **6** is depicted. ...
>
> ...
>
> [0046] Turning to **Fig. 9**, *an embodiment of a lead frame assembly **24** according to the invention is illustrated in detail.* ...In **Fig. 10**, a cross-section of lead frame assembly **24** of **Fig. 9**, taken along line 10-10, is illustrated to highlight molded stiffener **26** relative to the one or more dies **10** and lead frame **6**...

Furthermore, regardless of the embodiment of a molded stiffener **26** depicted in **Figs. 9-11**, *the claims at issue* are to a device that is defined by a plurality of stiffeners attached to a substrate.

The Examiner is respectfully directed to Applicant's published application at paragraph [0049], which addresses embodiments of Applicant's devices having a plurality of stiffeners on a substrate (emphasis added).

> [0049] ...It is contemplated that *a plurality of stiffeners* can be disposed on lead frame **6** of lead frame assembly **24**. Further, each of the plurality of stiffeners can comprise various configurations (e.g., size and/or shape).

Throughout the description, Applicant teaches various configurations and combinations of stiffeners for incorporation in the devices. See, for example, at paragraph [0043], (emphasis added).

> [0043] ...In other embodiments, molded stiffener 26 can also be disposed on surface 28 of lead frame 6 in the form of *a strip, a plate, a ring, a rectangle, a square, an oval, and the like*. In addition to the variety of shapes molded stiffener 26 can assume, the molded stiffener can come in *various sizes* (e.g., length 42, width 44, and thickness 46). Thus, *the size and/or shape of molded stiffener 26 can be varied* to correspond to the size and/or shape of lead frame 6 and die assembly 24.

Other embodiments of a molded stiffener include the stiffener with cross members, the stiffener extending or protruding from the surface of a lead frame or flush with the substrate surface, the stiffener situated on each side of a substrate and/or at the edges of a substrate, etc., which are described in the Summary at paragraphs [0012] to [0015] and at paragraphs [0039] and [0044].

Contrary to Applicant's devices and methods as claimed, the casing **217** in McMillan's **Fig. 6** is a single component and continuous structure in the form of a *dam* to contain encapsulant within the walls **222**. See McMillan's description of **Fig. 6** at col. 9, lines 7-34.

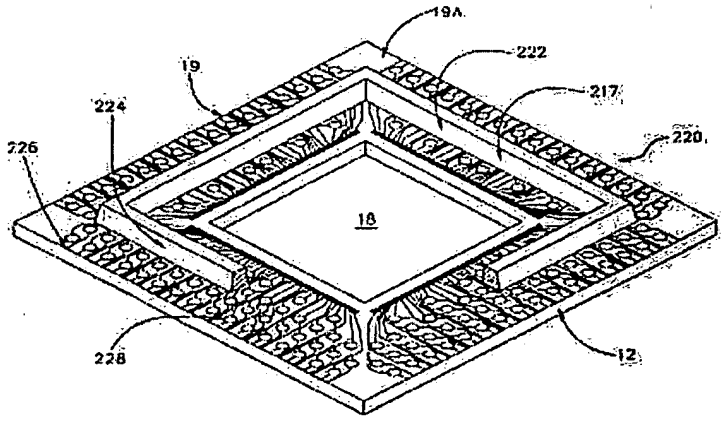

FIG. 6

> Referring now to **Fig. 6**, ...segmented casing **217** in the form of the segmented casing 17A of **Fig. 1B** is shown and secured to the top side 19A of circuit substrate 12 of a heat sink chip carrier package 220. ...The *encapsulant* may, as described above, be dispensed into the cavity 18 and *contained by the inside walls 222*.

McMillan does not describe a *plurality* of components attached to a substrate as defined by Applicant's claims, and there is no suggestion to substitute a plurality of components for McMillan's dam-type continuous casing **217**. Such a substitution would be contrary to the intended purpose of the casing **217** – that is, as a dam to contain encapsulant.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are *not* sufficient to render the claims *prima facie* obvious. *In re Ratti*, 123 USPQ 349, 352 (CCPA 1959). See, MPEP § 2143.01.

The purpose and function of casing **217** in McMillan's assembly is as a dam enclosure for an encapsulant material. Clearly, one skilled in the art would not modify casing **217** into multiple components.

Regarding the rejection of Claim 17, the Examiner stated that McMillan teaches stiffeners **217** or **17** "*in the form of a grid, lattice, a grille, and a web*" citing to **Fig. 3** (Office Action at page 3). The Examiner's assertion is in error.

McMillan's **Fig. 3** illustrates casing **17** as a *dam* that *surrounds* the encapsulant **120**, covered by lid **122**. It is noted that **Fig. 3** further illustrates *wires* **26** and a *metal pattern* **19**.

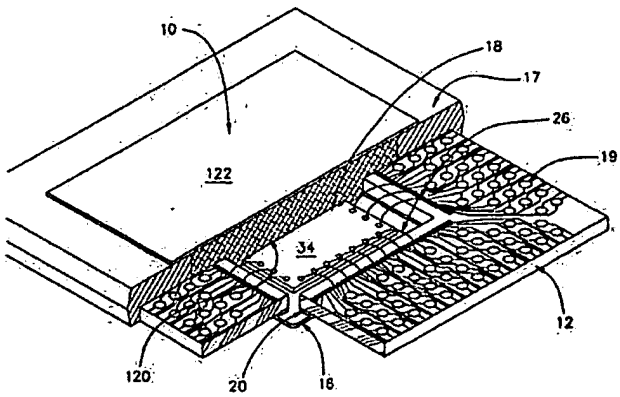

FIG. 3

See the description of **Fig. 3** at col. 8, lines 23-39 (emphasis added).

> ...In **Fig. 3** the *casing 17* is disposed upon the substrate **12** around the underlying heat sink 16. ...*The casing 17 forms a dam for the encapsulant 120* which is dispensed therein covering the chip 34, heat sink 16, *wires 26 and metal pattern 19*. A lid **122** is disposed over the encapsulant **120** and sealed to the casing **17** ...

Contrary to the Examiner's assertion, McMillan does *not* describe a stiffener *in the form of a grid, lattice, a grille or a web* as defined in Claim 17.

Regarding the rejection of Claims 86-88, the Examiner stated that McMillan teaches stiffeners "*in the form of strips or plate*" citing to **Fig. 6** (Office Action at page 3). The Examiner's assertion is in error.

As discussed above, McMillan's **Fig. 6** illustrates casing **217** as a *single* and *continuous* element that forms a *dam* to contain encapsulant on the substrate.

McMillan does not teach or suggest a *plurality* of molded plastic stiffeners in the form of a *plate* or *strips* attached to a substrate as defined in Claims 86-88.

McMillan does not teach or suggest Applicants' devices or methods as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims under 35 U.S.C. §103(a) (McMillan and APA)

The Examiner rejected Claims 10, 11 and 55-57 as obvious over McMillan in view of "Admitted Prior Art" (APA), citing to Applicant's Figures 1-2 and specification at pages 1-2. This rejection is respectfully traversed.

The Examiner cites APA at page 2, line 12, for disclosing that prior art stiffeners 14 can be composed of a thermosetting polymeric material.

First of all, with regard to the Examiner's statements on the "Admitted Prior Art (APA)," the Examiner continues to *mischaracterize* Applicant's disclosure regarding the prior art devices at paragraphs [0004] and [0005] of the published application US 20030155636.

The Examiner stated as follows (Office Action at page 6; emphasis added):

> APA discloses a semiconductor device and method having a substrate or lead frame 6 (fig. 1 and spec., page 1, line 13); *and the stiffener 14 molded to the substrate 6* (fig. 1)...

This is incorrect. As clearly stated at paragraphs [0004] and [0006] – the *prior art stiffener* **14** is ***not*** molded to the substrate.

The prior art stiffener **14** is attached to the lead frame *with adhesive*. See at paragraphs [0004] and [0006] (emphasis added).

> [0004] The package illustrated in Fig. 1 can be assembled by first constructing a die assembly 24. ... After die assembly 24 is assembled, *plastic or metal stiffener 14 is secured to lead frame 6 of die assembly 24 with adhesive element 12...*
>
> ...
>
> [0006] Plastic stiffeners have also been used to support a lead frame. Typically, in those cases where a plastic stiffener is used, a thermoplastic or thermosetting polymeric material is heated and introduced into a mold and, upon cooling, *the mold is opened and a plastic stiffener is produced.* Thereafter, *the plastic stiffener is secured to the lead frame using an adhesive tape or paste.*

As for the Examiner's proposed modification, even if, *arguendo*, one were to modify McMillan's disclosure to utilize a thermosetting material, it would not provide Applicant's devices or methods as claimed. As discussed above, McMillan does not teach or suggest Applicant's devices defined by a *plurality* of stiffeners attached to a substrate. The disclosure of APA does not correct the deficiencies of McMillan's disclosure.

McMillan, either alone or combined with APA, does not teach or suggest Applicants' devices or methods as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims under 35 U.S.C. §103(a) (McMillan with Gregory)

The Examiner rejected Claims 23 and 60 as obvious over McMillan in view of USP 4,710,419 (Gregory). This rejection is respectfully traversed.

The Examiner maintains that it would be obvious to modify the substrate of McMillan in the form of a reel or a leadframe, citing to substrate **30** and leadframe **31** in Figs. 2-7 of Gregory.

For the reasons stated above with regard to McMillan's failure to disclose the recited elements of the claims, the proposed modification of McMillan's device with the Gregory's disclosure would *not* result in Applicant's devices or methods as claimed.

Accordingly, withdrawal of this rejection of the claims is respectfully requested.

Information Disclosure Statement.

Applicant filed an Information Disclosure Statement on November 8, 2006, but has not yet received the submitted Form PTO-1449 from the Examiner. Applicant requests return of the Form PTO-1449 showing the listed items as initially and examined.

Extension of Term.

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that a one-month extension of term is required. Please charge the required fee (large entity) to Account No. 23-2053. If an additional extension is required, please consider this a petition therefor, and charge the required fee to Account No. 23-2053.

It is respectfully submitted that the claims are in condition for allowance and notification to that effect is earnestly solicited.

Respectfully submitted,

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Dated: September 24, 2008

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